

We claim:

Claim 1. A process for formulating a ruminant food ration, the process comprising:

determining the methionine needs of the ruminant,  
identifying a plurality of natural or synthetic feed  
5 ingredients and the nutrient composition of each of said  
ingredients wherein one of said ingredients is a hydroxy  
analog of methionine selected from the group consisting  
of 2-hydroxy-4-(methylthio)butanoic acid, ammonium salts  
of 2-hydroxy-4-(methylthio)butanoic acid, alkaline earth  
10 salts of 2-hydroxy-4-(methylthio)butanoic acid, alkali  
earth salts of 2-hydroxy-4-(methylthio)butanoic acid,  
zinc salts of 2-hydroxy-4-(methylthio)butanoic acid,  
alkane esters of 2-hydroxy-4-(methylthio)butanoic acid,  
alkane amides of 2-hydroxy-4-(methylthio)butanoic acid,  
15 and oligimers of 2-hydroxy-4-(methylthio)butanoic acid,  
and

formulating a ration from the identified feed  
ingredients to meet the determined methionine needs of  
the ruminant which comprises one or more grains, the  
20 hydroxy analog of methionine, and optionally a bypass fat  
wherein (i) the hydroxy analog of methionine is added  
separately from any bypass fat which is included in the  
ration, and (ii) the ration is formulated on the basis  
that at least 20% of the hydroxy analog of methionine is  
25 assumed to be available for absorption by the ruminant.

2. The process of claim 1 wherein the hydroxy analog of methionine is a salt of 2-hydroxy-4-(methylthio)butanoic acid selected from the group consisting of ammonium, magnesium, calcium, lithium, sodium, potassium, and zinc.

3. The process of claim 1 wherein the hydroxy analog of methionine is an ester of 2-hydroxy-4-(methylthio)butanoic acid selected from the group consisting of methyl, ethyl, 2-propyl, butyl, and 3-methylbutyl.

4. The process of claim 1 wherein the hydroxy analog of methionine is an amide of 2-hydroxy-4-(methylthio)butanoic acid selected from the group consisting of methanamide, dimethanamide, ethylmethanamide, butylmethanamide, dibutylmethanamide, and butylmethanamide.

5. The process of claim 1 wherein the ration is formulated on the basis that at least 40% of the hydroxy analog of methionine is assumed to be available for absorption by the ruminant.

6. The process of claim 1 wherein the ration does not comprise a bypass fat.

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7. A process for formulating a ruminant food ration, the process comprising:

determining the methionine needs of the ruminant,  
identifying a plurality of natural or synthetic feed  
5 ingredients and the nutrient composition of each of said  
ingredients wherein one of said ingredients is a hydroxy  
analog of methionine selected from the group consisting  
of 2-hydroxy-4-(methylthio)butanoic acid, ammonium salts  
of 2-hydroxy-4-(methylthio)butanoic acid, alkaline earth  
10 salts of 2-hydroxy-4-(methylthio)butanoic acid, alkali  
earth salts of 2-hydroxy-4-(methylthio)butanoic acid,  
zinc salts of 2-hydroxy-4-(methylthio)butanoic acid,  
alkane esters of 2-hydroxy-4-(methylthio)butanoic acid,  
alkane amides of 2-hydroxy-4-(methylthio)butanoic acid,  
15 and oligimers of 2-hydroxy-4-(methylthio)butanoic acid,  
and

formulating a ration from the identified feed  
ingredients to meet the determined methionine needs of  
the ruminant which comprises mixing one or more grains  
20 with the hydroxy analog of methionine, wherein (i) the  
ration is formulated on the basis that at least 20% of  
the hydroxy analog of methionine is assumed to be  
available for absorption by the ruminant, and (ii) the  
ration does not comprise a bypass fat.

8. The process of claim 7 wherein the ration is formulated on the basis that at least 40% of the hydroxy analog of methionine is assumed to be available for absorption by the ruminant.

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9. A process for formulating a ruminant food ration, the process comprising:  
determining the methionine needs of the ruminant,  
identifying a plurality of natural or synthetic feed  
5 ingredients and the nutrient composition of each of said ingredients wherein one of said ingredients is a hydroxy analog of methionine selected from the group consisting of 2-hydroxy-4-(methylthio)butanoic acid, ammonium salts of 2-hydroxy-4-(methylthio)butanoic acid, alkaline earth  
10 salts of 2-hydroxy-4-(methylthio)butanoic acid, alkali earth salts of 2-hydroxy-4-(methylthio)butanoic acid, zinc salts of 2-hydroxy-4-(methylthio)butanoic acid, alkane esters of 2-hydroxy-4-(methylthio)butanoic acid, alkane amides of 2-hydroxy-4-(methylthio)butanoic acid,  
15 and oligimers of 2-hydroxy-4-(methylthio)butanoic acid, and

formulating a ration from the identified feed ingredients to meet the determined methionine needs of the ruminant which comprises mixing one or more grains  
20 with a hydroxy analog of methionine, wherein (i) the ration is formulated on the basis that at least 20% of the hydroxy analog of methionine is assumed to be

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available for absorption by the ruminant, and (ii) the ration does not comprise a bypass fat.

10. The process of claim 9 wherein the ration is formulated on the basis that at least 40% of the hydroxy analog of methionine is assumed to be available for absorption by the ruminant.

11. The process of claim 9 wherein the ration is formulated on the basis that between about 40% and about 55% of the hydroxy analog of methionine is assumed to be available for absorption by the ruminant.

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